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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/709,142	11/08/2000	Francis James Canova JR.	PALM-3530.P	3247

7590 11/24/2003
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San Jose, CA 95113

EXAMINER

CASCHERA, ANTONIO A

ART UNIT	PAPER NUMBER
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2676

DATE MAILED: 11/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/709,142

Applicant(s)

CANOVA ET AL.

Examiner

Antonio A Caschera

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 29 September 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 5-7 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto (U.S. Patent 5,784,132) in view of Taniguchi (U.S. Patent 4,824,212).

In reference to claim 1, Hashimoto discloses a display device comprising a panel structure housing pixel electrodes laid out in a matrix form (see column 1, lines 14-21 and prior art Figure 8). Hashimoto also discloses a drive substrate which is used to switch the pixel electrodes individually (see column 1, lines 17-21). Note, the office interprets the drive substrate "switching" process to be substantially similar to applicant's claimed light modulation (see lines 3-4 of claim 1) as the drive substrate controls the electric position (On/Off) of each pixel. Hashimoto also discloses dummy pixels arranged in positions so as to surround the effective display pixels (see column 5, lines 64-66) which the office interprets as substantially similar to a pixel border having a predetermined width as the specific width is a matter of design choice as preferred by the designer and which best suits the application. Hashimoto discloses each dummy pixel made up of the same contents as an effective display pixel however the dummy pixels are not provided with a pixel electrode (#4 of Figure 4) (see column 6, lines 47-48 and Figure 4 where dummy pixel lacks pixel electrode as seen in #4 of right most pixel (effective display

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pixel))). Note, the pixel electrode of Hashimoto is seen to be substantially similar to an active element as the pixel electrode may be switched to illuminate the pixel. Hashimoto does not explicitly disclose the dummy pixels allowing light to pass through to improve contrast of edge-displayed images, as newly amended to claim 1, however Taniguchi does. Taniguchi discloses an LCD device comprising two display region types, a display region and a non-display region (see lines 1-8 of abstract). Taniguchi discloses independently controlling elements of the non-display region, from those in the effective display region, to make the non-display region bright or dark (see column 2, lines 58-64). Note, the office interprets the elements making up the non-display region of Taniguchi substantially similar to the dummy pixels of applicant's claim.

Taniguchi also discloses lighting the non-display region, either bright or dark, to create a distinguishable difference between the effective display and non-display regions (see column 2, lines 65-68). Note, the office interprets such a distinguishable difference substantially similar to contrast. Neither Hashimoto nor Taniguchi explicitly disclose generating an image wherein the image is representative of information stored in a frame buffer memory as a frame buffer is well known in the art to store frames of graphic data, known to make up graphic images or video, that are waiting to be displayed onto a display screen. It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a frame buffer memory for storing information of an image to be displayed as such a technique is well known in the art (Official Notice). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the dummy pixel display techniques of Hashimoto with the illuminating non-display region of the display of Taniguchi in order to create legible characters on a display device by implementing the rendering of, normally illegible characters, varying the

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illumination of the boundary of the effective display region surrounding the characters (see columns 1-2, lines 66-13 of Taniguchi).

In reference to claim 5, Hashimoto and Taniguchi disclose all of the claim limitations as applied to claim 1 above however neither Hashimoto nor Taniguchi explicitly disclose the predetermined width of the pixel border to be two pixels. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to implement the predetermined border width of two pixels. Applicant has not disclosed that a border width of two pixels provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with any sized pixel border, suited for the application, because adjusting the correct dummy pixel border, to reduce contrast between edge adjacent text/images, may require different sized pixel borders depending upon different sized displays, font sizes or other device limitations. Therefore, it would have been obvious to one of ordinary skill in this art to modify Hashimoto to obtain the invention as specified in claim 5.

In reference to claim 6, Hashimoto and Taniguchi disclose all of the claim limitations as applied to claim 1 above however neither Hashimoto nor Taniguchi explicitly disclose the matrix display comprising 160 rows and 160 columns of pixels. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to implement the display device of Hashimoto comprising 160 rows and 160 columns. Applicant has not disclosed that such a limitation provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with the display device of Hashimoto because such a limitation of size of

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display provides no immediate criticality when viewing the invention as a whole. Further, if the scope of the invention were geared towards a portable electronic device, it would have been obvious to create the display screen with a smaller size than rather the size of a desktop computer display. Therefore, it would have been obvious to one of ordinary skill in this art to modify Hashimoto to obtain the invention as specified in claim 6. Again, the office interprets such a limitation as a matter of design choice as preferred by the designer and which best suits the application.

In reference to claim 7, Hashimoto and Taniguchi disclose all of the claim limitations as applied to claim 1 above in addition, Hashimoto discloses the pixel electrodes laid out in matrix form with a plurality of thin film transistors (see column 1, lines 19-22).

In reference to claim 14, Hashimoto and Taniguchi disclose all of the claim limitations as applied to claim 7 above. Claim 14 is similar in scope to claim 7 and therefore is rejected under similar rationale.

2. Claims 2, 3, 8-10, 12, 13 and 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto (U.S. Patent 5,784,132), Taniguchi (U.S. Patent 4,824,212) and further in view of Hill et al. (U.S. Patent 6,577,291 B2).

In reference to claim 2, Hashimoto and Taniguchi disclose all of the claim limitations as applied to claim 1 above however neither Hashimoto nor Taniguchi explicitly disclose a backlight element for illuminating the matrix of pixels. Hill et al. discloses a color LCD comprising of a light source at the back of the display which provides light to the elements of the display (see column 25, lines 17-41 and prior art #2102 of Figure 21A). Hill et al. also discloses the LCD comprising a backlight source which provides light to RGB color filters to create a

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desired color for each pixel of the display (see Hill et al. column 25, lines 17-22 and prior art Figure 21A). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the dummy pixel display techniques of Hashimoto and the non-display region of the display of Taniguchi with the backlight assembly of Hill et al. in order to create legible characters on a display device by implementing the rendering of, normally illegible characters, varying the illumination of the boundary of the effective display region surrounding the characters (see columns 1-2, lines 66-13 of Taniguchi).

In reference to claims 3, 10 and 17, Hashimoto, Taniguchi and Hill et al. disclose all of the claim limitations as applied to claims 2, 9 and 16 respectively in addition, Hill et al. discloses each pixel to comprise of RGB display elements with each of the display elements having a transparent electrode that can be separately controlled (see column 25, lines 42-50 and prior art Figure 21B).

In reference to claim 8, claim 8 is similar in scope to claim 1 and therefore is rejected under similar rationale. Further, neither Hashimoto nor Taniguchi explicitly disclose a portable electronic device however Hill et al. does. Hill et al. discloses an LCD display utilized by a portable personal computer (see column 1, lines 55-62 and Figure 1). Hill et al. also discloses a personal computing device to comprise of a processor coupled to a bus (see #521 and 523 of Figure 5), a memory unit couple to the bus (see #522 of Figure 5), a user input device coupled to the bus via a serial port interface (see #540 and 546 of Figure 5) and a display unit coupled to the bus via a video adapter (see #547 and 548 of Figure 5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the dummy pixel display techniques of Hashimoto and the illuminating non-display region of the display of

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Taniguchi with the computer system of Hill et al. in order to make portable the character contrast techniques as indicated above (see column 1, lines 55-62 of Hill et al.).

In reference to claims 9 and 16, Hashimoto, Taniguchi and Hill et al. disclose all of the claim limitations as applied to claims 8 and 15 respectively. Claims 9 and 16 are similar in scope to claim 2 and therefore are rejected under similar rationale.

In reference to claims 12 and 18, Hashimoto, Taniguchi and Hill et al. disclose all of the claim limitations as applied to claims 8 and 15 respectively. Claims 12 and 18 are similar in scope to claim 5 and therefore are rejected under similar rationale.

In reference to claims 13 and 19, Hashimoto, Taniguchi and Hill et al. disclose all of the claim limitations as applied to claims 8 and 15 respectively. Claims 13 and 19 are similar in scope to claim 6 and therefore are rejected under similar rationale.

In reference to claim 15, Hashimoto discloses a display device comprising a panel structure housing pixel electrodes laid out in a matrix form (see column 1, lines 14-21 and prior art Figure 8). Hashimoto also discloses a drive substrate which is used to switch the pixel electrodes individually (see column 1, lines 17-21). Note, the office interprets the drive substrate "switching" process to be substantially similar to applicant's claimed light modulation (see lines 3-4 of claim 1) as the drive substrate controls the electric position (On/Off) of each pixel. Hashimoto also discloses dummy pixels arranged in positions so as to surround the effective display pixels (see column 5, lines 64-66) which the office interprets as substantially similar to a pixel border having a predetermined width as the specific width is a matter of design choice as preferred by the designer and which best suits the application. Hashimoto discloses each dummy pixel made up of the same contents as an effective display pixel however the dummy pixels are

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not provided with a pixel electrode (#4 of Figure 4) (see column 6, lines 47-48 and Figure 4 where dummy pixel lacks pixel electrode as seen in #4 of right most pixel (effective display pixel)). Note, the pixel electrode of Hashimoto is seen to be substantially similar to an active element as the pixel electrode may be switched to illuminate the pixel. Hashimoto does not explicitly disclose the dummy pixels allowing light to pass through to improve contrast of edge-displayed images, as newly amended to claim 15, however Taniguchi does. Taniguchi discloses an LCD device comprising two display region types, a display region and a non-display region (see lines 1-8 of abstract). Taniguchi discloses independently controlling elements of the non-display region, from those in the effective display region, to make the non-display region bright or dark (see column 2, lines 58-64). Note, the office interprets the elements making up the non-display region of Taniguchi substantially similar to the dummy pixels of applicant's claim.

Taniguchi also discloses lighting the non-display region, either bright or dark, to create a distinguishable difference between the effective display and non-display regions (see column 2, lines 65-68). Note, the office interprets such a distinguishable difference substantially similar to contrast. It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the dummy pixel display techniques of Hashimoto with the illuminating non-display region of the display of Taniguchi in order to create legible characters on a display device by implementing the rendering of, normally illegible characters, varying the illumination of the boundary of the effective display region surrounding the characters (see columns 1-2, lines 66-13 of Taniguchi). Neither Hashimoto nor Taniguchi explicitly disclose a portable electronic device however Hill et al. does. Hill et al. discloses an LCD display utilized by a portable personal computer (see column 1, lines 55-62 and Figure 1). Hill et al. also discloses a personal

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computing device to comprise of a processor coupled to a bus (see #521 and 523 of Figure 5), a memory unit couple to the bus (see #522 of Figure 5), a user input device coupled to the bus via a serial port interface (see #540 and 546 of Figure 5) and a display unit coupled to the bus via a video adapter (see #547 and 548 of Figure 5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the dummy pixel display techniques of Hashimoto and the illuminating non-display region of the display of Taniguchi with the computer system of Hill et al. in order to make portable the character contrast techniques as indicated above (see column 1, lines 55-62 of Hill et al.). Hashimoto, Taniguchi and Hill et al. do not explicitly disclose generating an image wherein the image is representative of information stored in a frame buffer memory as a frame buffer is well known in the art to store frames of graphic data, known to make up graphic images or video, that are waiting to be displayed onto a display screen. It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a frame buffer memory for storing information of an image to be displayed as such a technique is well known in the art (Official Notice).

In reference to claim 20, Hashimoto, Taniguchi and Hill et al. disclose all of the claim limitations as applied to claim 15 above. Claim 20 is similar in scope to claim 7 and therefore is rejected under similar rationale.

3. Claims 4 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto (U.S. Patent 5,784,132), Taniguchi (U.S. Patent 4,824,212), Hill et al. (U.S. Patent 6,577,291 B2) and further in view of Sono et al. (U.S. Patent 5,513,028).

In reference to claims 4 and 11, Hashimoto, Taniguchi and Hill et al. disclose all of the claim limitations as applied to claims 3 and 10 respectively above however Hashimoto,

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Taniguchi and Hill et al. do not explicitly disclose the dummy pixels comprising of a red sub-dummy pixel, green sub-dummy pixel and a blue sub-dummy pixel. Sono et al. discloses a liquid crystal display device having display and non-display areas made up of a pixel electrode substrate (see lines 1-3 of abstract). Sono et al. discloses a dummy area of the display, made up of dummy pixels, that has the same configuration as the display area (see column 3, lines 18-21). Sono et al. also discloses each pixel of the display area to comprise of a red, green or blue color filter (see column 3, lines 54-63). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the dummy pixel display techniques of Hashimoto, the illuminating non-display region of the display of Taniguchi and RGB pixel component arrangement of Hill et al. with the technique of providing the dummy pixels with a similar configuration as the display area pixels, as disclosed by Sono et al., in order to make the process of manufacturing display screens using dummy pixels simple and easy by being able to merely expand the display area and creating dummy pixels from the expanded area (see column 3, lines 23-27 of Sono et al.).

Response to Arguments

4. Applicant's arguments, see page 10, filed 9/29/2003, with respect to the specification, have been fully considered and are persuasive. Minor informalities have been corrected within the specification and therefore the objection to the specification has been withdrawn.

5. Applicant's arguments, see page 10, filed 9/29/2003, with respect to the drawings, have been fully considered and are persuasive. The proposed drawings corrections now include

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previously not mentioned reference numbers and therefore, the objection to the drawings has been withdrawn.

6. Applicant's arguments, see page 10, filed 9/29/2003, with respect to the objection of claim 14, have been fully considered and are persuasive. The dependency of claim 14 was corrected, as suggested by the examiner, and therefore the objection to claim 14 has been withdrawn.

7. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

8. Applicant's arguments filed 9/29/2003, in reference to claims 2, 9 and 15 have been fully considered but they are not persuasive.

In reference to claims 2, 9 and 15, the applicant argues that the limitation, "a back lighting element for illuminating said matrix and said pixel border" is not taught or rendered obvious in view of Hashimoto over Hill et al. (see page 13, paragraph 1 of "Applicant's Remarks"). The office disagrees as the Hill et al. reference teaches a color LCD comprising of a light source at the back of the display that provides light to the elements of the display (see column 25, lines 17-41 and prior art #2102 of Figure 21A). Further, Hill et al. also discloses the LCD comprising a backlight source which provides light to RGB color filters to create a desired color for each pixel of the display (see Hill et al. column 25, lines 17-22 and prior art Figure 21A). Since the backlight source of Hill et al. illuminates all pixels of the display the office interprets that such dummy pixels could be included in the "all" pixels of the display.

Conclusion

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Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Antonio Caschera whose telephone number is (703) 305-1391. The examiner can normally be reached Monday-Thursday and alternate Fridays between 7:00 AM and 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella, can be reached at (703)-308-6829.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

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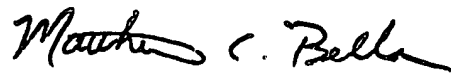
(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,
Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding
should be directed to the Technology Center 2600 Customer Service Office whose telephone
number is (703) 306-0377.

aac

11/5/03



MATTHEW C. BELLA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600